Deregulation of Domestic Aviation in USA, Canada and Australia: A Comparison of Approach, Impacts and Implications

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Abstract:

Governments have traditionally played a major role in the aviation industry. This paper reviews the changing domestic aviation policies of Australia, Canada and the USA. This study forms part of a larger research project comparing the three countries above as well as New Zealand and Japan. The larger project covers domestic and international aviation as well as airport and airway management.

The authors have reviewed a number of studies of the impact of deregulation in the countries considered. Key structural characteristics of the aviation industry in each of the specified countries are compared. These characteristics include market size, residents' propensity to travel, basic issues of geography and the prominence of airline hubbing, the number of carriers, vertical integration and relative airfares.

There appear to be five stages of industry development evident to greater or lesser degrees in the three countries reviewed. The regulatory phase associated with industry development: the regulatory phase with industries pressure building; the transition to deregulation; immediate post deregulation; and finally consolidation.

In Canada and Australia consumers appear to have benefited from deregulation - these countries are still in the immediate post deregulation phase. The USA is in the consolidation phase and there is some contention as to the sustainability of the benefits of deregulation.

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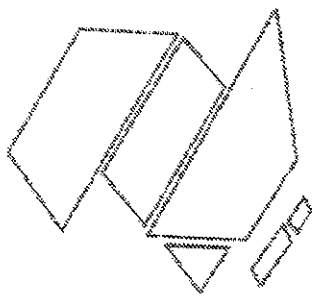


1. INTRODUCTION

Governments have traditionally played, and in our view will continue to play, a major role in the aviation industry. In the past, and still in many countries today, governments have owned airlines; applied economic regulation covering market entry, route entitlements, frequencies, fares; and regulated safety. Governments have played a key role also in infrastructure supply and management as owner and manager of most airports and in the management of air traffic control.

International aviation has grown within a web of bilateral agreements between governments. These agreements have determined how many airlines can fly between countries, the specific cities and intermediate points served, the type of traffic the airlines are permitted to carry (third, fourth and fifth freedom traffic) and the capacity entitlement.

This paper reviews the changing domestic aviation policies of a number of Pacific Rim countries. Differences in the scope and timing of policy changes are of particular interest. Countries reviewed include Australia, Canada and the USA.

This study forms part of a larger research project comparing the three countries above as well as New Zealand and Japan. The larger project covers domestic and international aviation as well as airport and airway management.

As expected the difficulty with any cross country comparison is data comparability. For this reason at this early stage of the overall research project, this paper reviews studies undertaken to date on aspects of domestic aviation deregulation and aviation development. Key structural characteristics of the aviation industry in each of the specified countries are compared. These characteristics include market size, residents' propensity to travel, basic issues of geography and the prominence of airline hubbing, the number of carriers, vertical integration and relative airfares.

The structural characteristics and growth prospects in turn are seen to have influenced the policy environment. The paper contrasts the policy environment of the 1980s with the likely environment of the 1990s and speculates on policy developments.

2. BACKGROUND - THE COUNTRIES COMPARED

Population and Urban Settlement

Table 1 compares the population and urban settlement characteristics of Australia, Canada and the USA. The United States, with a population of 241 million, is about five and one half times the combined population of Canada and Australia. All three countries are highly urbanised, although with 85% of Australia's population living in urban areas, it surpasses both Canada and the USA. Canada and Australia have one common settlement characteristic which has major influence over aviation development - a large area sparsely populated and, as a consequence, very low population densities. Holmes (1987) has suggested that it is unrealistic to include vast areas of uninhabited space in calculating population density. He calculates the reduced areas identified as 'inhabited area' in Table 1. The figures in brackets show this inhabited area as a proportion of the total. This area covers one-fifth of Australia and Canada but over two thirds of the USA.

The urban concentration in a small area suggests few major transportation corridors in Canada and Australia in contrast to the USA. In fact, in Canada the primary corridor is

The urban concentration in a small area suggests few major transportation corridors in Canada and Australia in contrast to the USA. In fact, in Canada the primary corridor is east-west, and close to the US border. In Australia the corridor is linear along the east coast.

Table 1: Comparisons of Australia, Canada and the USA.

Characteristic	AUSTRALIA	CANADA	USA
Population (millions of persons) 1991	17.3	27.0	240.7
% Living in Urban Areas	85%	77%	75%
Area ('000 sq. kms)	7,687	9,976	9,363
Population Density (Persons/sq. km)	2.1	2.7	27
Inhabited Area ('000 sq kms)	1,600 (21%)	2,000 (20%)	6,500 (69%)
Population Density (Persons/sq. km)	10.8	13.5	37

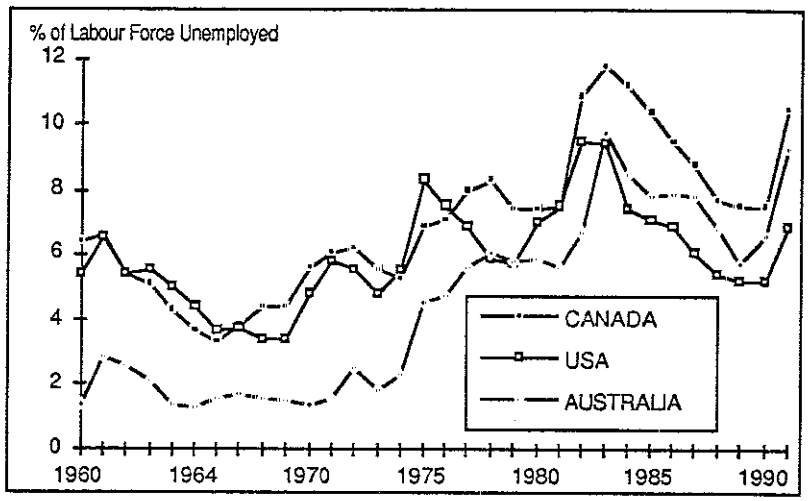
Source: Schauble (1993), Holmes (1987).

Economic Growth and Unemployment

A comparison of domestic aviation developments in the three countries is complicated by their economic circumstances. Much of the large growth in aviation traffic in the 1980s is due to an increase in holiday - or discretionary traffic. When the economy moves into recession, airlines are forced to discount to maintain loads. Yields and revenues drop and profitability declines sharply. Figure 1 shows the level of unemployment in the three countries over the past 30 years. In evaluating the impact of policy changes we need to be aware of the sharp increases in unemployment, consistent with economic downturns:

- in Australia in the early 1970s and again in the mid 1970s, and early 1980s and late 1980s;
- Canada in the mid 1960s, mid 1970s, early 1980s and late 1980s;
- USA with a similar trend to Canada.

Figure 1: Unemployment Rates in Australia, Canada and the USA



Source: Reserve Bank (1992)

The significance of these economic trends will become evident later but many of the important phases of deregulation have coincided with economic downturns.

Airline Scale

Based on its population size and urban settlement characteristics we would expect the US airline industry to dwarf that of Australia and Canada. Table 2 shows the top 50 rank of US, Canadian and Australian airlines. The dominance of what have been termed the 'megacarriers' is obvious. American, United and Delta in particular are very large by world standards.

The increasingly consolidated Australian and Canadian airlines are nonetheless reasonably sized middle ranking airlines.

Table 2: Airline Size and Results in 1991 - USA, Canada, Australia

Top 50 Rank	Airline	Sales (US $ mills)	Net Result	Passenger Kms (mills)	Passengers (mills)
	USA				
1.	American	12,887.2	(289.9)	132,502	75.90
2.	United	11,662.6	(331.9)	132,430	62.00
4.	Delta	10,062.8	(239.5)	108,383	74.19
9.	Northwest	7,533.7	(3.1)	86,787	41.24
11.	USAir	6,514.0	(305.0)	54,877	55.60
13.	Continental	5,356.9	(340.9)	66,678	36.97
18.	TWA	3,658.5	34.6	46,124	20.78
27.	Pan Am	2,093.9	(283.1)	31,614	10.95
38.	America West	1,413.9	(222.0)	20,970	16.91
41.	Southwest	1,316.6	26.9	18,179	22.70
	Canada				
23.	Canadian Airlines	2,505.7	(141.1)	20,395	8.25
24.	Air Canada	2,497.4	(190.2)	21,980	9.90
	Australia				
20.	Qantas	3,099.4	105.7	28,836	4.53
33.	Ansett Trans. In.	1,916.9	(100.1)	8,211	7.51
45.	Australian	1,168.3	(37.3)	7,643	7.35

Source: Airline Business (1993)

Table 3 shows the propensity of the populations of the three countries to travel by air. Surprisingly, US residents have a relatively low propensity to travel abroad but a high propensity to undertake domestic air travel. Thus the domestic market in the USA becomes the largest in the world.

Table 3: Propensity of the Population to Travel By Air

Characteristic	AUSTRALIA	CANADA	USA
Outbound as a % of Total Population	12%	14%	6%
Domestic Air Passengers (mill persons) (1991)	18.7	24.3	406.5
Propensity to Travel by Air (No. of Domestic Passengers/ Population)	1.1	0.9	1.7

Source: Avstats Australia, ICAO; ATC; *Civil Aviation Statistics of the World, 1991*.

3. REGULATION AND DEREGULATION IN USA, CANADA AND AUSTRALIA

Tables 4 and 5 following indicate the key dates and policies in the process of regulation and deregulation in the USA, Canada and Australia. We have broken the review into two parts - the development path (Table 4) and the path to deregulation (Table 5).

Helpful articles in the formulation of these table in the case of the USA include: Meyer and Strong (1992), Rakowski and Bejou (1992), Dempsey (1990). For Canada: Gillam, Oum and Tretheway (1989), Button (1989), Oum, Stanbury and Tretheway (1991) were most useful. For Australia much work has been undertaken by the Bureau of Transport & Communications Economics (BTCE 1991a, 1991b, 1992).

Table 4 covers the 1920s to early 1960s. Basically the airline industry was in its development phase. Regulatory bodies were charged with promotion and development. In Canada and Australia a key element of this promotion and development was direct investment and ownership by the Federal Government. Particular markets were often protected for the government airline.

The 1960s saw the introduction of the jet era and larger aircraft with superior operating economics were introduced progressively during the 1960s and 1970s.

During the 1970s a number of forces were converging. Holiday or discretionary travel by air was increasing. The acceptance of the privileged position of the main airlines was subject to greater scrutiny and questioning. Fare discounting, charters and limited competition was permitted.

The election of US President Carter and his subsequent deregulation of the US airline industry was the most significant regulatory development worldwide in post war aviation history.

The pressure for this change in the USA had been building in the 1960s and 1970s. There was a growing chorus of economists and Congress reviews lamenting the lack of

competition, high prices and excessive service which characterised the regulated aviation scene. In addition, the pressure for improved public services occurred at the same time as pressure for reduced taxes placing the US Government in a fiscal vice.

President Carter was elected in 1976 and trumpeted the ideals of market competition, small government and consumerism. Deregulation of the US aviation scene became an obvious and high profile implementation of the Carter Mandate. Apart from opening routes, removing controls over fares and capacity, the US government removed the demarcation between domestic and international operation for US airlines.

The US Airline Deregulation Act specified a time frame for liberalisation with progressive deregulation through to 1984. Deregulation actually took place at a much faster rate, with full deregulation effectively in place by 1982.

Canada and Australia deregulated at a slower pace. To some extent, however, Canada's pace was influenced by the USA. The close proximity of Canada's main transcontinental routes to the USA meant that failure to respond could encourage Canadian residents to travel across their own country via the USA. The liberalisation that began in the 1970s continued with CP Air unrestricted in its competition with Air Canada by the 1980s, and Wardair and charter operators permitted to access domestic traffic. By the late 1980s most regulatory controls were finally lifted and Air Canada was privatised.

The Australian Government had imposed service requirements upon its major domestic airlines in the early 1980s. Pressures for change continued and led to the 'May Committee' review of economic regulation of domestic aviation. It found, as had reviews in the USA and Canada, low productivity, high profits and limited service for the leisure market. In 1987 the Australian Government gave the required three years' notice to the domestic airlines that the domestic market was to be deregulated.

Thus the emphasis had changed - in all three countries - from development to service. In Canada and Australia the approach had been gradual, compared to the USA. Perhaps the gradual approach is more common to Canadian and Australian public administration. Perhaps the US transportation administration was staffed by zealots committed to the aviation 'big bang'. Whatever the reason, the outcome appears to have been that a definite 'transition' period is evident in Canadian and Australian industry development prior to deregulation.

Table 4: The Airline Development Path

Era	USA	Canada	Australia
1920s - 1960 Promotion and Growth	**1926** Air Commerce Act gave Dept of Commerce Authority for promoting the airline industry. **1938** Civil Aeronautics Act -established Civil Aeronautics Authority (later the CAB) with complete authority over entry, exit, routes and fares. Also had authority over air safety. **1958** Federal Aviation Act - safety regulation transferred to Federal aviation Agency.	**1933** Canadian Pacific Railways buys into Canadian Airways **1937** Trans Canada Airlines Act establishes TransCanada Airlines (name changed to Air Canada in 1964) as crown Corporation to establish trans continental services **1938** Transport Act - Board of Transport Commissioners to oversee rail and air transport development. **1942** Canadian Pacific buys a number of regionals and forms Canadian Pacific Airlines (name change to CP Air in 1968) **1944** Air Transport Board replaces Board of Transport Commissioners (advises Minister) **Late 1940s and 1950s** many of Canada's regional airlines established. Charter operations established particularly for international market. **1953** Wardair formed as charter airline. **1959** CP Air permitted to provide trans Continental services - one frequency per day between Vancouver and Montreal.	**1946** Trans Australia Airlines commenced operations. **1947** Commonwealth purchased Qantas Empire Airways **1952** Civil Aviation Agreement between Commonwealth and ANA. **1957** Ansett Transport Industries takes over ANA. Civil Aviation Agreement (only TAA and Ansett to operate trunk route services).
1960s Introduction of Jet Aircraft		**1966 & 69** Comprehensive Regionals policy - Regionals to complement the networks of two trans continental airlines. Later areas were designated for each of the regionals. **1967** National Transportation Act creates Canadian Transport Commission - wider cross modal coordination **1967** Further liberalisation of CP Air's Trans Continental routes.	

Table 5: The Path to Domestic Airline Deregulation

Era	USA	Canada	Australia
1970s/ Early 1980s	**1976** airlines were permitted to discount in some markets. **1978** Airline Deregulation Act - established a programme of deregulation and the end of CAB authority over entry, capacity, aircraft type and fares.	**1974, 77** further liberalisation for CP Air's trans Continental services. **1979** All constraints on CP Air's services were removed. Wardair obtained licenses to operate domestic non-scheduled inter Continental services.	**1972** Airlines Agreement placed service obligations on the airlines. **1979** INT and News Corp purchased Ansett Transport Industries. **1981** Airlines Agreement - aimed to increase competition but maintained the two airlines policy as it applied to the trunk route network. Trunk routes were defined as any route linking 18 trunk route centres.
1980s From Develop-ment to Efficiency and service	**1984** CAB abolished and Department of Transport given policy responsibility and antitrust authority. Reagan and Bush administrations permit substantial consolidation throughout the 1980s.	**1984** New Canadian Air Policy removed regulations concerning quality of service. **1988** National Transportation Act abolished entry, exit and fare control and relaxed controls over frequencies and aircraft types. Government decides to privatise Air Canada. Sale of 43% complete by September 1988. **1989** second step in the Air Canada privatisation (a further 57% of equity). PWA Corp takeover of Wardair.	**1985** Independent Review of Economic Regulation of Domestic Aviation (May Review). Reported in 1987. Found low labour productivity, high and stable profits, disadvantaged consumers (favoured business vs. leisure market). **1987** Government gave notice that it would terminate the Airlines Agreement in October 1990. **1990** Government abolished controls over aircraft imports, passenger capacity, fares entry of new domestic operations on trunk routes. **1991** Government decided to privatise Australian and Qantas. Cross-shareholdings between Qantas and the domestic airlines were prohibited. **1992** One Nation Statement: Removed cross-equity restrictions, provided for multiple designation of Australian carriers, moved towards opening the Tasman for Australasian carriers. Qantas purchased Australian Airlines. Qantas enters Australian domestic market.

4. DEVELOPMENTS SINCE DEREGULATION - THE IMPACTS

Structural Impacts

The consolidation of the US airline industry following deregulation is well known. Kuhn (1988) suggests that there were as many as 38 airlines merging in the 8 years following deregulation in the USA. Table 6 below shows the market impact of this consolidation.

The first point to note from Table 6 is that the US was relatively concentrated *before* deregulation. Much of the activity in the 1977 to 1985 period reduced this consolidation with many start up airlines. Thus Rakowski and Bejou (1992) point to 1985 as the 'peak of regulatory achievement'. Support for this contention increases as we review other studies of the US industry.

Table 6: Consolidation in the US Airline Industry, 1977 to 1989

Number of Carriers	1977	1985	1989
Top 15 US Carriers			
Share of Passenger Revenue	94%	90%	99%
Share of Revenue Passenger Miles	95%	91%	99%
Top 10 US Carriers			
Share of Passenger Revenue	85%	79%	95%
Share of Revenue Passenger Miles	87%	80%	96%

Source: Rakowski and Bejou (1992)

Apart from this consolidation of the major interstate domestic carriers in the USA many of the regional and commuter airlines were absorbed by the majors. Meyer and Strong (1992) point to the phased absorption by the US majors;

- initial agreements to share facilities and improve connections - particularly with smaller airlines able to provide feed traffic to major hubs,
- joint operating agreements and shared access to computer reservations systems,
- limited equity initially and then full ownership of the regional airlines.

In Canada the process of consolidation has also taken place. Button (1989) suggests that mergers in Canada have a 'longer tradition' than in the USA. In the regulated

Canadian environment, mergers were often the major option when carriers faced with financial difficulties were prevented from exiting thinner routes. By 1987 the scope of the mergers had increased with Air Canada responsible for 50-55% of revenue and Canadian Airlines International 35% (Table 7). This consolidation increased further in 1989 with the Canadian Airlines International takeover of Wardair creating a virtual duopoly in Canadian aviation.

Table 7: Share of Domestic Aviation Market, 1987

Airline	Domestic Market Share (% Revenue)
Air Canada	50-55
Canadian Air International	35
Wardair	7
Small Regionals	Remainder

Source: Button, 1989, p.38.

In Canada there are now just a handful of independent turboprop and a few charter operators but these account for some 15% of seats and a much smaller proportion of industry sales (Oum, Stanbury, Tretheway (1991). As in the USA, the majors have established strong associations with the regional airlines. One difference between the Air Canada and Canadian Airlines International approach to regional airlines has been that Air Canada has chosen to purchase many of its regional associates outright, whilst Canadian Airlines International has purchased large minority stakes. Table 8 shows the scope of the ownership.

Table 8: Feeder Carriers in Canada, 1989

Air Canada Feeders	Aircraft	Seats	% Owned by Trunk	Year Acquired
Air BC	32	1,237	85%	1986
Air Ontario	43	1,951	75%	1987
Air Alliance	7	259	75%	1988
Air Nova	14	749	49%	1986
Northwest Territorial	9	530	90%	1986
First Air	21	1,300	Alliance only	
Air Toronto	7	164	100%	1990
CAIL Feeders				
Time Air	35	1,334	46.5%	1983
Calm Air	14	276	45%	1987
Ontario Express	20	554	49.5%	1987
Intercanadian	31	1,309	35%	1986
Air Atlantic	15	540	45%	1985

Source: Oum, Stanbury & Tretheway, 1991, p. 10.

Australia the process of consolidation has also taken place although because of the e of the market and limited number of airlines the outcome is not as dramatic. One of

the key acquisitions that took place, the TNT/News Corporation of Eastwest took place in 1987, in the *transitional phase* to deregulation. Ansett has also acquired Skywest, Kendall and Aeropelican. Ansett associates now include Ansett Express, Ansett W.A. and Ansett NT.

For its part Australian Airlines acquired Sunstate and added this to its list of associates - Australian Regional, Eastern Australian, Air Queensland and Australian Airlink. The most dramatic developments since deregulation have been the two start-ups of Compass, the acquisition in 1992 of the whole of Australian by Qantas Airways and the purchase of 25% of Qantas by British Airways.

Compass I commenced operations in December 1990 and ceased just prior to Christmas one year later. Compass II commenced operations in August 1992 and ceased operations in March 1993. The two incarnations of Compass chose a different path. Compass I operated the larger A300 aircraft whilst Compass II chose the MD80 aircraft to generate greater frequency. By September 1991 Compass I had captured 21% of the markets in which it was then operating or 10% of the total market (BTCE, 1991b).

Many views have been expressed as to why the two airlines failed. These include inadequate capitalisation, inadequate terminal access, failure to attract sufficient number of business travellers. Undoubtedly the state of the economy compounded these problems. Starting an airline in an economic recession adds an additional need to discount beyond the normal requirement to gain share. This is a problem encountered too by US airline startups in the early 1980s.

The market share of the Australian carriers over the post-deregulation period is shown in Table 9. There is a relative stability in this picture which contrasts with share movements in the USA and Canada.

Table 9: Market Shares of Australian Domestic Airlines

	1990	*1991*	*1992*	*1993*
	(All figures % of total)			
Passengers				
Australian Group	44.3	42.8	40.1	41.2
Ansett Group	48.5	49.7	46.5	49.7
Eastwest	5.4	5.9	6.5	5.8
Compass	-	1.6	6.8	3.3
Other	1.7	-	-	-
Passenger Kilometres				
Australian Group	44.3	42.3	39.9	41.9
Ansett Group	49.7	50.5	46.4	50.7
Eastwest	4.2	5.0	4.9	4.9
Compass	-	2.2	8.8	2.5
Other	1.8	-	-	-

Source: Department of Transport and Communications *Air Transport Statistics: Domestic Airlines* Various Issues.

Other important structural elements include control over distribution - computer reservations systems (CRS) and travel trade developments. In the USA the majors developed their computer reservations systems to accommodate the dramatic increase in fare types introduced to the market. With a large proportion of sales by travel agents to airlines with listings on the first screen (and particularly on the first line!) it was inevitable, at least early in the development of the CRS that it would become a competitive weapon. Later, with regulatory influence over screen displays the competitive impacts were reduced. We have subsequently witnessed a consolidation of these systems in the USA, partly as an outcome of industry consolidation.

In Canada some 70% of airline tickets are sold by travel agents and 80% of travel agents are connected to a CRS (Oum, Stanbury, Tretheway, 1991). Air Canada's system *Reservec* was the only system until 1894 when CP Air launched it competitor, *Pegasus*. By mid 1987 Canadian Airlines International and Air Canada had decided to share the costs of the CRS operation. The two separate systems were then merged into *Gemini*.

In Australia, Ansett and Australian jointly developed Southern Cross Distributions Systems linked to Europe's Galileo system. Qantas had formed a separate system *Fantasia* based on the Sabre system of American Airlines. Both systems were collapsed into one operating organisation in 1990 to reduce costs.

One characteristic of the Australian scene not evident to the same extent in the USA or in Canada is the purchase of travel agencies. Both of the major Australian carriers have purchased agencies in the period since deregulation. Ansett has in its stable of agents

Metro Travel, Traveland, ANZ Travel. Australian has purchased Westpac Travel. Both airlines now have a large number of outlets.

Fares and Pricing

Estimation of the level of the benefit for consumers resulting from reductions in fares has proved contentious in the US. The particular area of disagreement relates to the comparison of yields before and after deregulation.

There are a number of areas of relative agreement however. There are more travellers using discount fares and the level of discounts have increased. Table 10 below shows the estimates for Canada, the USA and Australia.

The table shows both the proportion of passengers travelling on discount fares and the average level of discount. Comparable data in this area is difficult to find. Oum, Stanbury and Tretheway (1991) compare Canada and the USA. They find that in both countries the proportion of all passengers travelling on discounts has increased from 25% to 60% in Canada and from 57% to 91% over the period 1980 to 1989 and that the level of discount has increased. The Australian data is not as detailed but estimates by the BTCE (1991b) suggest the same trend as for Canada and the US.

Table 10: Discounting and Deregulation

	% of Passengers Travelling on Discount Fares			Level of Discount off Unrestricted Economy Fares (%)		
	Canada	*USA*	*Australia*	*Canada*	*USA*	*Australia*
1980	25	57			43	
1983	45	82		25	52	
1986/87			41			45
1988	63	91		45	63	
1989	60	90		40-50	63	
1991 (May)			50			
1991 (Oct.)			60-70			Up to 60-70

Source: Oum, Stanbury & Tretheway, 1991; BTCE, 1991b.

A further area of agreement relates to the markets sensitivity to prices. The results of analyses by Joesch and Zick (1990) and those of Oum, Stanbury & Tretheway (1991) show:

- an increase in price sensitivity in the 1980s - particularly in the markets to long standing hubs. This is consistent with an increase in the proportion of discretionary travellers;
- air fares for the short haul markets have increased faster than those for long haul routes.

On the principal area of disagreement - whether deregulation has promoted a reduction in airfares - there seems to be some agreement; (i) that reductions are greatest the less the industry concentration on particular routes, (ii) that fares generally declined in the

period from deregulation until the mid 1980s, and (iii) that fares and fare construction have become more complex with a greater variety. Dempsey quotes the number of fare changes in the US market as having increased from 4.6 million in 1982 to just over 49 million in 1987. In Australia the variety of fare type and discount has increased dramatically since deregulation, an area of reported concern to travel agents.

Service Quality

Morrison and Winston (1986) point to gains in service frequency as the largest consumer gain from airline deregulation in the USA. Butler and Huston (1990) provide later data that supports this position. Butler and Huston's analysis was based on a sample of 225 airports not major hubs in 1988 but which had a jet service in 1976.

The average number of flights per day increased overall. Butler & Huston measured the number of services from an average city to a hub - their view being that this would dramatically increase access to the interstate network. These services increase from 2.2 to 5.2 per day.

Table 11: The Growth in Flights to US Ports

	Average No. of Flights/Day	No. of Daily Services to Hub City	No. of Daily Services to Non Hub Cities	No. of Non Stop Destination Choices
1976	24.3	2.2	6.3	8.5
1988	37.8	5.2	3.8	9

Source: Butler and Huston, 1990.

Non hubs were one of the areas of concern to Dempsey (1990). He studied service frequencies to 515 non-hub communities over the period 1978 to 1987 and found that service frequency *declined* for 61% of these communities. He found that a further 28% lost all service and only 6% benefited from new services. These results appear inconsistent with those shown in Table 11. The problem as with so many of the studies is that their outcome is highly dependent upon the years chosen for analysis. With the US economy moving into recession in the early 1990s the position is further complicated.

Leigh (1990) studied the number of departures for major carriers that were accounted for by flights from its principal hub. The results are shown in Table 12. Also shown are the proportion of passengers travelling with online connections, interline connections and via direct nonstop services.

Table 12: Hubs and Connections for US Passengers

Airline	Share of US Hubs		
	1979	1984	1988
American	36	48	48
Continental	28	50	47
Delta	29	40	47
Northwest	33	36	49
United	43	49	54
	Proportion of All Passengers		
Single Plane Journey	70	72	66
Online Connection	16	22	32
Interline Connections	13	6	3

Source: Leigh, 1990, p.51.

These results show the rapid post-deregulation movement towards hubs by the major US airlines. The trend is greatest, however, in the 1979 to 1984 period and for American and Continental the move to hubs is stable or declines in the 1984 to 1988 period.

Similar details are not available for Canada although as with Australia, the limited number of large cities and the linear transport networks reduce the scope for hubbing notwithstanding its operational benefits. In Australia as in Canada the thinner routes have been transferred to associated second line carriers to small hubs.

Oum, Stanbury, and Tretheway (1991) found that weekly frequencies almost doubled in southern Canada in the 1984-89 period, having been virtually unchanged between 1978 and 1984. Button (1989) found that in the year to May 1988 (the first year following 'full' deregulation), the number of departures increased by 24% while the number of seats increased by just 12%. This reflects the shift to smaller carriers and aircraft.

In Australia the BTCE (1991b) constructed a sample of the top 40 city pairs in terms of passengers carried. The June quarters 1991 and 1990 were compared. The BTCE found a 21% increase in RPT flights on these routes over this period compared with an increase of 18% in passenger numbers. A later study of these routes (BTCE, 1992) compared the September 1991 and 1990 quarters and found that the number of flights had increased by 20% and passengers by 36%. For both these time periods the inter capital routes and the tourist destinations such as Coolangatta and Cairns were found to experience large increases in frequency.

A comparison of June quarters 1992 over 1990 revealed an increase in frequency of 28%. In its later study the BTCE also constructed a quarterly index of flight frequency for the top 50 domestic airline routes over the June 1990 to March 1992 period (frequencies were weighted by passenger numbers). Flight frequencies were found to have increased by 22% between the December 1990 and 1991 quarters and by 13% between the March 1991 and 1992 quarters.

The analysis by the BTCE (1992) of the growth in non-stop services revealed an increase from 151 services in the June 1991 quarter to 171 in the June quarter of 1992, an increase of 13%.

The BTCE (1992, p.19) concluded that at the end of August 1992 "passengers' accessibility to the RPT network had not been adversely affected" (by deregulation) and that "....no communities had lost all RPT services as a result of interstate deregulation or other aviation reform measures".

Thus at least in Canada and Australia, consumers appear to have benefited so far from deregulation. In the USA there is some contention with the increased industry consolidation in the later part of the 1980s.

5. THE FUTURE - SOME LESSONS FOR OTHER COUNTRIES

There appear to be five stages of industry development evident to greater or lesser degrees in the three countries reviewed:

i. regulatory phase associated with industry development - largely the 1950s and 1960s;

ii. regulatory phase with industry pressures building - the late 1960s and 1970s;

iii. transition to deregulation - in Canada and Australia this period would cover the mid 1970s to late 1980s;

iv. immediate post deregulation - evident in the USA over the early 1980s and current for Canada and Australia;

v. consolidation - evident in the later 1980s for US carriers.

The economic circumstances cloud the impacts of deregulation. In the USA the period immediately after deregulation was characterised by severe recession. Similarly in Australia the difficulties for start up airlines were compounded by recession. Consolidation in Canada and Australia arose at a time when all airlines are experiencing financial difficulties.

Nonetheless, it does appear from this analysis that:

- Canada and Australia will support, at best, a domestic airline duopoly;
- the USA will be served by a handful of major airlines.

There is some question under these circumstances as to the ability of an "unregulated" industry to continue to provide the benefits delivered to date. To some extent the outcome rests on the 'contestability' of the airline market. With the benefits of economies of scope available to entrenched players, with the large amounts of capital required to start an airline and given the poor track record of start-ups, there is a need to question the potential contestability.

Regardless of the views on contestability there is the reality of the huge losses in the US industry, the number of airlines in Chapter 11 bankruptcy or close to it, and the Clinton administration's response. We appear on the edge of another era of experimentation in the world's largest domestic aviation laboratory.

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